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New Records of the Genus *Stenus* Latreille, 1797 in Taiwan with a Literature Review of the Taiwanese Species (Coleoptera: Staphylinidae)

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Abstract. The taxonomy of the genus *Stenus* Latreille, 1797 in Taiwan has been addressed in many papers. Herein, we reviewed previous references on Taiwanese *Stenus*. In addition, based on specimens from wetlands in northern Taiwan, three *Stenus* species are recognized: *Stenus alumoenus* Rougemont, 1981, *S. flavidulus paederinus* (Champion, 1924) and *S. frater* Benick, 1916. Among these species, *S. alumoenus* and *S. frater* are newly recorded from Taiwan. Habitus, bionomics, brief diagnosis and updated distributional records of these three species are provided. Our study provides supplementary data on the fauna of *Stenus* in Taiwan.

Key words: Oriental region, fauna, rove beetle, Steninae, wetland

Introduction

The genus *Stenus* is one of the most species-rich genera in Animalia, containing over 2,900 described species worldwide (Betz et al., 2018; Newton, 2019). In Taiwan, over 100 species have been recorded within the genus (Newton, 2019). These rove beetles are typical of moist habitats such as leaf litter, river banks and ponds (Betz et al., 2018). The biology of the genus has been reviewed in Betz et al. (2018).

Taxonomic studies of *Stenus* in Taiwan have been conducted since the early 1970s. Puthz (1971) described two new species and produced the first key to the Taiwanese species. The author described a few species and proposed the primary checklist for this genus in Taiwan (Puthz, 1981). Since then, multiple works have described a few new species and updated records in separated papers (Puthz, 1984, 2003, 2005, 2008a, 2009a, 2013a). The genus in mainland China has been revised including the Taiwanese species (Puthz, 2008b, 2012a). Puthz (2009b) reviewed the *cirrus* group in Taiwan. After that, Puthz (2011, 2012) reviewed the species with spotted elytra and non-spotted elytra with two respective keys to the species. Puthz (2013) reviewed the Oriental species including a few Taiwanese species. Naomi et al. (2017) reviewed the subfamily Steninae in Japan, with an update of the distributional records of *Stenus* in Taiwan.

This study is based on a field survey in wetlands of Taiwan by the authors. In the present study, we herein report two new records for the Taiwanese fauna: *Stenus alumoenus* Rougemont, 1981 and *S. frater* Benick, 1916, bringing the total species number of *Stenus* that occur in Taiwan to 113.

Materials and methods

The photographic method is modified from Hu (2020): Habitus photos were taken with an Olympus OM-D E-M1 digital camera with Olympus M. ZUIKO DIGITAL ED 30 mm F3.5 macro lens. After photographs were taken, they were montaged by Helicon Focus 7 software. Habitat photos were taken with an iPhone XR. Figures were modified using Adobe Photoshop CS5 as needed. Plates were created using Adobe Illustrator CS5 and Adobe Photoshop CS5. Voucher specimens were deposited in FSHc (Fang-Shuo Hu, private collection, Taichung, Taiwan) and NMNS (National Museum of Natural Science, Taichung, Taiwan).

Results

Stenus alumoenus Rougemont, 1981

(Fig. 1)

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Material examined. TAIWAN: New Taipei City: 1 ♂ and 1 ♀, Wanggu Village (望古里), Pingxi Dist., 25.0316, 121.7560, ca. 206 m, 30-III-2020, leg. H. C. Liu (FSHc; NMNS).

Diagnosis.

In Taiwan, *Stenus alumoenus* is similar to *S. electrigemmatus* Puthz and *S. frater* Benick. It can be separated from *S. electrigemmatus* by its orange spots which are not extended to the posterior margin of the elytra. It can be separated from *S. frater* by the presence of entirely black abdominal segments 3–5.

Distribution.

Stenus alumoenus is known from China (Guangdong, Zhejiang), Thailand, Laos (Tang et al., 2017). The species is newly recorded from Taiwan.

Bionomics.

The specimens of *S. alumoenus* were collected by aquatic netting in densely vegetated shallow wetland located on a low mountain. The wetland is surrounded by a primary forest (Fig. 4) in northern Taiwan. The species is sympatric with *Stenus flavidulus paederinus* and *Stenus frater*.

***Stenus flavidulus paederinus* (Champion, 1924)**

(Fig. 2)

Material examined. TAIWAN: New Taipei City: 1 ♂, Wanggu Village (望古里), Pingxi Dist., 25.0316, 121.7560, ca. 206 m, 30-III-2020, leg. H. C. Liu (FSHc).

Diagnosis.

In Taiwan, *Stenus flavidulus paederinus* can be readily separated from other *Stenus* by presence of orange pronotum and abdominal segments 3–6.

Distribution.

Stenus flavidulus paederinus is known from China (Yunnan, Guangdong, Hainan, Fujian, Hongkong), Taiwan, Japan (Ryukyu Islands), India, Thailand, Vietnam, Malaysia (Borneo), Indonesia, Philippines and Brunei (Naomi et al., 2017; Tang et al., 2017).

Bionomics.

The specimens of *S. flavidulus paederinus* were collected by aquatic netting in a densely vegetated shallow wetland located on a low mountain. The wetland is surrounded by a primeval forest (Fig. 4) in northern Taiwan. The species is sympatric with *S. alumoenus* and *Stenus frater*.

***Stenus frater* Benick, 1916**

(Fig. 3)

Material examined. TAIWAN: New Taipei City: 3 specimens, Wanggu Village (望古里), Pingxi Dist., 25.0316, 121.7560, ca. 206 m, 30-III-2020, leg. H. C. Liu (FSHc); 1 male and 5 specimens (sex unknown), Lingjiaoliao (嶺腳寮), Pingxi Dist., ca. 214 m, 31-VII-2020, leg. H. C. Liu, F. S. Hu, C. H. Ma (FSHc; NMNS).

Diagnosis.

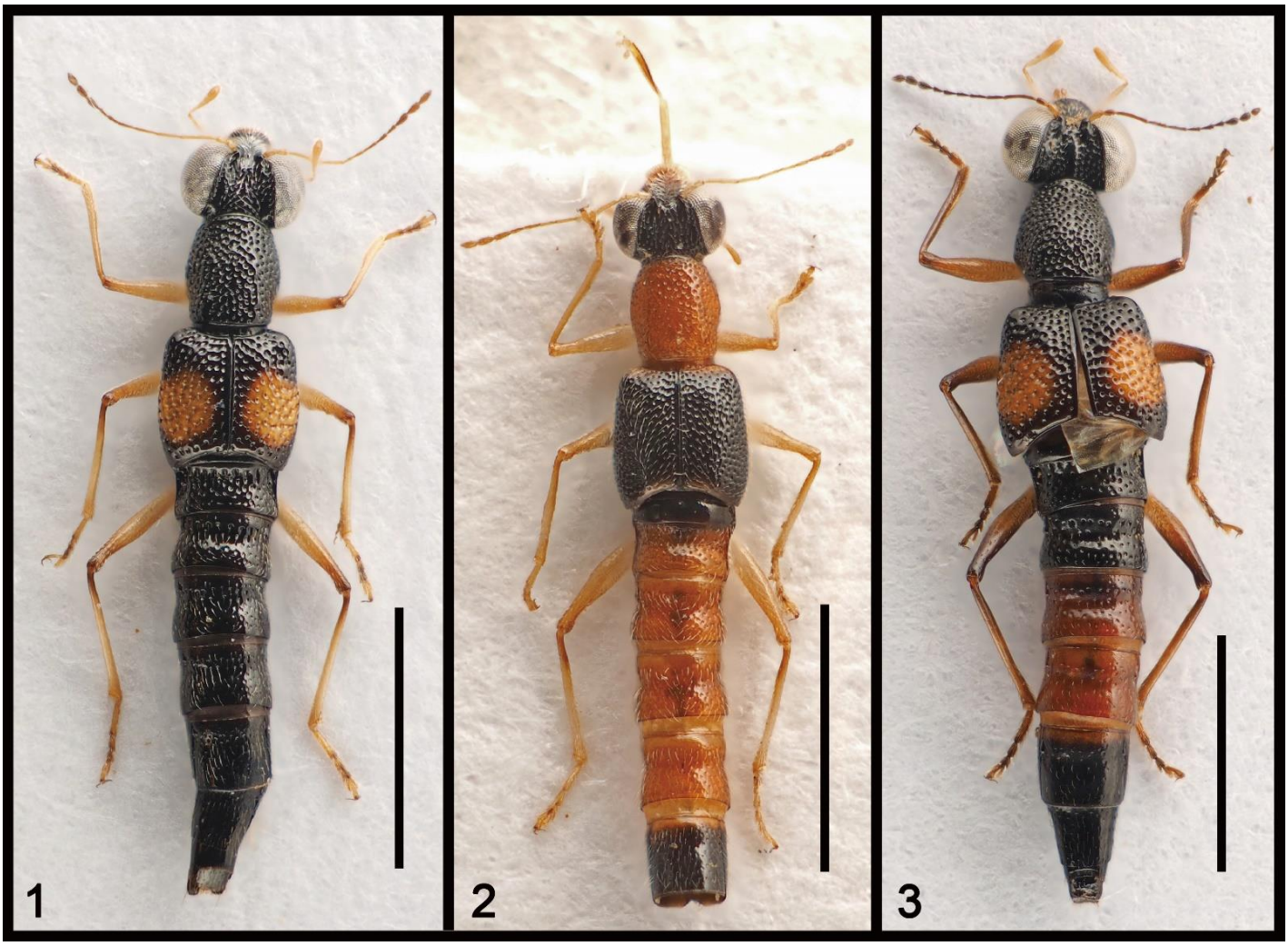
In Taiwan, *Stenus frater* is similar to *S. alumoenus*. It can be separated from *S. alumoenus* by presence of brick red abdominal segments 5 and 6.

Distribution.

Stenus frater is known from China (Hongkong, Guangdong), Vietnam, Indonesia (Tang et al., 2019). The species is newly recorded from Taiwan.

Bionomics.

The specimens of *S. frater* were collected by aquatic netting in densely vegetated shallow wetlands located on a low mountain. The wetlands are surrounded by primary forests (Fig. 4–5) in northern Taiwan. The species co-occurrs with *S. alumoenus* and *S. flavidulus paederinus*.



Figures 1–3. Habitus. 1, *Stenus alumoenus* Rougemont, 1981; 2, *S. flavidulus paederinus* (Champion, 1924); 3, *S. frater* Benick, 1916. Scale bars: 2 mm.

Figures 4–5. Habitats of *Stenus alumoenus* Rougemont, 1981, *S. flavidulus paederinus* (Champion, 1924) and *S. frater* Benick, 1916. 4, Wanggu Village; 5, Lingjiaoliao.

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臺灣產突眼隱翅蟲新紀錄種及文獻回顧（鞘翅目：隱翅蟲科）

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摘要: 臺灣產突眼隱翅蟲屬 *Stenus* Latreille 的分類處理被發表於多篇文章，本文回顧這些文章，除此之外，根據北臺灣濕地所採集的標本，鑑定出三種突眼隱翅蟲：美艷突眼隱翅蟲 (*Stenus alumoenus* Rougemont, 1981)、金黃突眼隱翅蟲 (擬毒隱翅蟲亞種) (*S. flavidulus paederinus* (Champion, 1924))、親緣突眼隱翅蟲 (*S. frater* Benick, 1916)，其中，美艷突眼隱翅蟲及親緣突眼隱翅蟲首次記錄於臺灣，並提供這三個物種的整體照、生物學資訊、鑑定方法及更新後的分佈紀錄，本研究補充了臺灣產突眼隱翅蟲的物種相資料。

關鍵詞: 東方區、動物相、隱翅蟲、突眼隱翅蟲亞科、濕地

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臺灣澎湖群島產水棲甲蟲（昆蟲綱：鞘翅目）註記

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摘要: 澎湖群島是臺灣最大的離島群，位於臺灣海峽，然而水棲甲蟲的研究仍然鮮為人知，因此為了更了解臺灣離島地區的水棲昆蟲，有必要對澎湖各島嶼進行實地調查並檢查博物館的藏品。本研究報導 5 科 15 種水棲甲蟲在澎湖群島之紀錄，其中紅邊大龍蝨 (*Cybister sugillatus* Erichson, 1834)、點刻三線大龍蝨 (*Cybister tripunctatus lateralis* (Fabricius, 1798))、姬麗龍蝨 (*Hydaticus rhantoides* Sharp, 1882)、擬姬龍蝨 (*Rhantaticus congestus* Klug, 1833)、光澤方胸龍蝨 (*Canthydrus nitidulus* Sharp, 1882)、中華巨基小頭水蟲 (*Peltodytes sinensis* (Hope, 1845))、費氏貝牙蟲 (*Berosus fairmairei* Zaitzev, 1908)、錨麗陽牙蟲 (*Helochares atropiceus* Régimbart, 1903)、密突麗陽牙蟲 (*Helochares neglectus* (Hope, 1845))為澎湖新紀錄種，而錨麗陽牙蟲亦為首次記錄於臺灣。

關鍵詞: 肉食亞目、牙蟲科、水棲昆蟲、新紀錄、離島

前言

澎湖群島為臺灣最大的離島群，位於臺灣海峽，座標為北緯 23°12 至 23°47，東經 119°19 至 119°43，東邊靠近臺灣本島，距離臺灣本島約 50 公里，西邊距離中國約 140 公里，總面積約為 126.864 平方公里，島數量多達 90 座，其中 3 座島嶼佔澎湖群島大部分的陸地 (圖一 A)，分別為澎湖本島 (大山嶼) 之面積 67.14 平方公里、西嶼之面積為 18.71 平方公里、白沙島之面積 13.88 平方公里，該群島全由澎湖縣管轄。澎湖群島地表平坦，無高山，夏季多雨，冬季少雨，平均年雨量約為 1,000 毫米，明顯少於臺灣本島的平均年雨量 2,500 毫米，淡水的環境以池塘、積水等靜止水域為主，鮮少有流動水域或濕壁環境。

水棲甲蟲為水域中常見的昆蟲，全球已描述超過 13,000 種 (Short, 2018)，在臺灣則已知超過 200 種 (Shao, 2020)，其中以龍蝨科 (Dytiscidae) 和牙蟲科 (Hydrophilidae) 的種類數最多，然而在澎湖群島的水棲昆蟲研究不多，其中水棲甲蟲更是鮮為人知。Miwa (1931) 首次記錄澎湖的水棲甲蟲，不久之後 Kamiya (1938) 也記錄了澎湖的水棲甲蟲，兩篇研究總共記錄龍蝨科 4 種和豉甲科 (Gyrinidae) 1 種，此後 Liu et al. (2020) 修訂臺灣的陷口牙蟲屬 (*Coelostoma*)，亦包含 1 種來自澎湖的牙蟲。本研究第一作者檢視臺灣主要的鞘翅目收藏機構和第二作者於澎湖群島 2020 年的實地考察，共新增 1 種臺灣新紀錄種及 9 種澎湖新紀錄。

材料與方法

本研究包含實地調查和博物館標本檢查，實地調查時間 2020 年 3 月 14 日與同年的 8 月 24 日，地點在澎湖縣，西嶼的靜止水域 (圖一 B–C)，採集方式為撈網與蝦籠。檢查之標本存放地為嘉南藥理大學環境工程與科學系 (CNU: Chia Nan University of Pharmacy & Science, Tainan City, Taiwan)、國立自然科學博物館 (NMNS: National Museum of Natural Science)、行政院農業委員會農業試驗所 (TARI: Taiwan Agricultural Research Institute)、第一作者收藏 (HCLC: H.-C. Liu collection, Hsinchu, Taiwan)，標本以 Icrokong 解剖顯微鏡觀察，相片以 Sony α7II 單眼相機拍攝，地圖使用 Photoshop CS6 繪製，標本比例尺之長度單位為毫米 (mm)。

符號與縮寫解釋: “spec.”指標本未辨識性別；“?”指該紀錄仍需再確認；“[ ]”指原標籤的產地未有中文名稱，因此提供相對應的中文地名。

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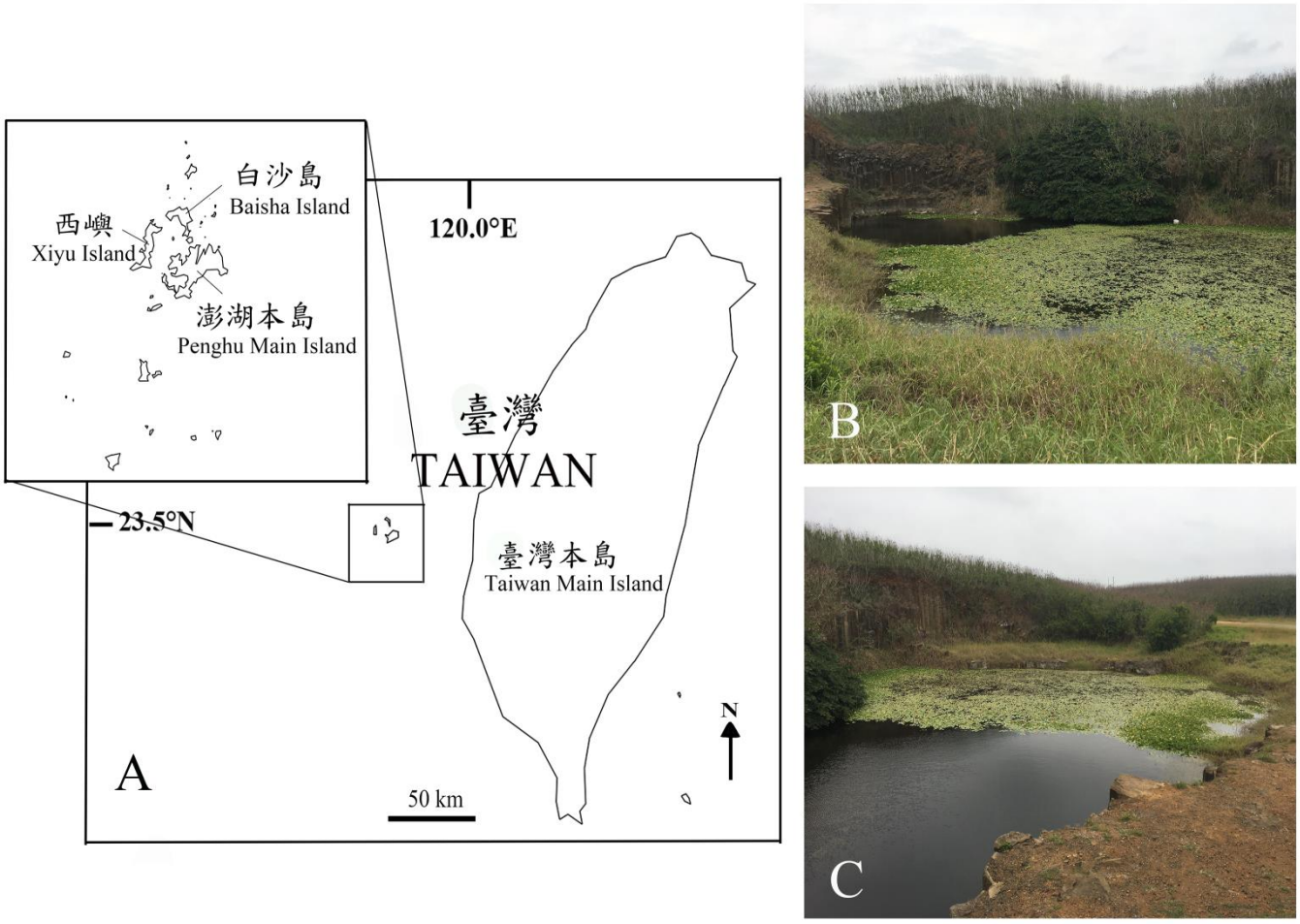


圖一、A: 澎湖群島地圖；B–C: 調查地點的棲地照。

結果

表一、澎湖群島的水棲鞘翅目名錄

科名	中文俗名	學名	文獻及備註
龍蝨科	大頭豹斑龍蝨	*Allodessus megacephalus* (Gschwendtner, 1931)	Kamiya (1938)
	紅邊大龍蝨	*Cybister sugillatus* Erichson, 1834	澎湖新紀錄
	點刻三線大龍蝨	*Cybister tripunctatus lateralis* (Fabricius, 1798)	澎湖新紀錄
	姬麗龍蝨	*Hydaticus rhantoides* Sharp, 1882	澎湖新紀錄
	黃紋麗龍蝨	*Hydaticus vittatus* (Fabricius, 1775)	Miwa (1931)
	中華粒龍蝨	*Laccophilus chinensis* Boheman, 1858	Kamiya (1938)
	夏普氏粒龍蝨	*Laccophilus sharpi* Régimbart, 1889	Miwa (1931)
	擬姬龍蝨	*Rhantaticus congestus* Klug, 1833	澎湖新紀錄
方胸龍蝨科	光澤方胸龍蝨	*Canthydrus nitidulus* Sharp, 1882	澎湖新紀錄
豉甲科	南方圓豉甲	*Dineutus australis* Fabricius, 1775	Miwa (1931)
小頭水蟲科	中華巨基小頭水蟲	*Peltodytes sinensis* (Hope, 1845)	澎湖新紀錄
牙蟲科	費氏貝牙蟲	*Berosus fairmairei* Zaitzev, 1908	澎湖新紀錄
	不丹陷口牙蟲	*Coelostoma bhutanicum* Jayaswal, 1972	Liu et al. (2020)
	錨麗陽牙蟲	*Helochares atropiceus* Régimbart, 1903	臺灣新紀錄
	密突麗陽牙蟲	*Helochares neglectus* (Hope, 1845)	澎湖新紀錄

龍蟲科
Family Dytiscidae

大頭豹斑龍蟲
Allodessus megacephalus (Gschwendtner, 1931)

Bidessus megacephalus Gschwendtner, 1931b: 21 (orig. descr., Kotosho); Miwa, 1931: 17 (Kotosho); Kamiya, 1938: 16 (Kotosho, Hookoto).
Bidessus maculosus Gschwendtner, 1931a: 462 (orig. descr.).
Bidessus tokunagai Kamiya, 1932: 5 (orig. descr.).
Liodessus megacephalus (Gschwendtner, 1931): Nilsson et al., 1995: 364 (Taiwan).

分布：臺灣、日本、中國 (Nakajima et al., 2020) ，澎湖的首次分布紀錄來自 Kamiya (1938)。

備註：Balke & Ribera (2004) 將原本位於 *Liodessus* 屬的大頭豹斑龍蟲 (*Allodessus megacephalus* (Gschwendtner, 1931)) 轉移至 *Allodessus* 屬，模式產地位於臺灣的蘭嶼。此種為該屬中唯一分布在東亞的物種，經常棲息在靠近海岸的淺水域 (Nakajima et al., 2020)。

紅邊大龍蟲
Cybister sugillatus Erichson, 1834
(圖二 A)

Cybister sugillatus Erichson, 1834: 227 (orig. descr.); Zimmermann, 1919: 77; Kano, 1931: 176 (Kotosho); Miwa, 1931: 19 (Taihorin); Miwa et al., 1932: 298 (Kotosho); Kamiya, 1938: 59 (Shinchiku, Kotosho); Nilsson et al., 1995: 370 (Taiwan); Liu, 2019: 21 (Lanyu, Taipei, Miaoli).
Cybister bisignatus Aubé, 1838: 88 (orig. descr.).
Cybister notasicus Aubé, 1838: 90 (orig. descr.).
Cybister olivaceus Boheman, 1858: 21 (orig. descr.).

標本檢查：TAIWAN: 1 male, 2 females, Penghu County, Xiyu Island, 24.VIII.2020, Jin-Huei Lin leg. (CNU, HCLC).

鑑定特徵：紅邊大龍蟲 (*Cybister sugillatus* Erichson, 1834) 體長 18–25 毫米，背面黑色至綠紅色，翅鞘近端部具有一對不明顯的深褐色斑紋。此種近似短腹大龍蟲 (*Cybister brevis* Aubé, 1838)，紅邊大龍蟲可由前胸背板側緣的暗紅色邊緣區分短腹大龍蟲。

分布：臺灣、日本、中國、東南亞、南亞 (Nakajima et al., 2020)。此種在臺灣的詳細分布為臺灣本島、金門群島、蘭嶼有分布紀錄 (Kano,1931; Fan et al., 2000; Liu, 2019)，本研究首次報導來自澎湖的紀錄。

點刻三線大龍蟲
Cybister tripunctatus lateralis (Fabricius, 1798)
(圖二 B)

Dytiscus tripunctatus Olivier, 1795: 14 (orig. descr.).
Cybister tripunctatus (Olivier, 1795): Sharp, 1882: 727 (Formosa); Miwa, 1931: 19 (Taihorin, Tainon); Nilsson et al., 1995: 371 (Taiwan); Fan et al., 2000: 140 (Kinmen); Liu, 2019: 21 (Chiayi, Miaoli, Nantou, Taichung, Taipei, Taitung).
Cybister tripunctatus lateralis (Fabricius, 1798): 64 (orig. descr.); Ohba et al., 2020: 2 (Taiwan).
Cybister tripunctatus orientalis Gschwendtner, 1931c: 90; Zimmermann, 1919: 77 (Taihorin, Tainan); Kamiya, 1938: 60 (Choshu, Hori, Shijukei, Taiheizan, Taito); Yano et al., 1983: 107 (Chiatou).
Cybister asiaticus Sharp, 1882: 731 (orig. descr.).

標本檢查：TAIWAN: 3 spec., Penghu County, Xiyu Island, 24.VIII.2020, Jin-Huei Lin leg. (CNU, HCLC).

鑑定特徵：點刻三線大龍蟲 (*Cybister tripunctatus lateralis* (Fabricius, 1798)) 體長 20–29 毫米，前胸背板與翅鞘側緣黃色，翅鞘黃紋寬度大於前胸背板，表面具有縱列點刻，但無刻紋；腹面黑色至深棕色。

分布：此種廣泛分布在亞洲 (Ohba et al., 2020)，包含東亞、東南亞、南亞 (Nakajima et al., 2020; Ohba et al., 2020)。臺灣本島紀錄相當多 (Sharp, 1882; Zimmermann, 1919; Miwa, 1931; Kamiya, 1938; Yano et al., 1983)，而離島的金門群島 (Fan et al., 2000) 也有紀錄，本研究首次報導來自澎湖的紀錄。

圖二、A: 紅邊大龍蟲 (*Cybister sugillatus* Erichson, 1834) 成蟲背面觀；B: 點刻三線大龍蟲 (*Cybister tripunctatus lateralis* (Fabricius, 1798)) 成蟲背面觀。

姬麗龍蟲

***Hydaticus rhantoides* Sharp, 1882**

(圖三 A)

Hydaticus rhantoides Sharp, 1882: 664 (orig. descr.); Yano et al., 1983: 108 (Kueijen, Fangliao, Tungjen, Chiatou); Liu, 2019: 21 (Taipei, New Taipei, Taichung, Nantou, Pingtung).
Hydaticus fengi Falkenström, 1936: 236; Miwa, 1931: 18 (Koshun); Kamiya, 1938: 49 (Taihoku, Kuraru); Satô, 1965: 126 (Urai).

標本檢查：TAIWAN: 1 male, Penghu County, Xiyu Island, 24.VIII.2020, Jin-Huei Lin leg. (NMNS).

鑑定特徵：姬麗龍蟲 (*Hydaticus rhantoides* Sharp, 1882) 體長 9–11 毫米，頭部黃褐色且後緣黑褐色，翅鞘密集的黑色小斑點。

分布：臺灣、日本、中國、東南亞 (Nakajima et al., 2020)。已知分布於臺灣本島 (Miwa, 1931; Kamiya, 1938; Satô, 1965; Yano et al., 1983; Liu, 2019)，本研究首次報導來自澎湖的紀錄。

黃紋麗龍蟲

***Hydaticus vittatus* (Fabricius, 1775)**

Dytiscus vittatus Fabricius, 1775: 825 (orig. descr.).
Hydaticus vittatus (Fabricius, 1775): Sharp, 1882: 671 (Formosa); Zimmermann, 1919: 76 (Anping, Kosempo); Kano, 1931: 176 (Kotosho); Miwa, 1931: 18 (Anping, Kosempo, Hokoto); Miwa et al., 1932: 298 (Kotosho); Kamiya, 1938: 51 (Taihoku, Jitsugetsutan, Kotosho); Wewalka, 1975: 87 (syn., Formosa), 2020: 29 (Kosempo, Taitung, Lanyu); Nilsson et al., 1995: 368 (Taiwan); Liu, 2019: 21 (Miaoli).
Graphoderus vittatus var. *lenzi* Schönfeldt, 1890: 170 (orig. descr.).
Hydaticus lenzi nepalensis Satô, 1961: 60 (orig. descr.).
Hydaticus sesquivittatus Fairmaire, 1880: 164 (orig. descr.).

標本檢查：TAIWAN: 2 males, 4 spec., Peng Hwu IsIs [=Penghu Islands, 澎湖群島], 4-13. vi. 1948, C. W. Che & I. T. Chen leg. (TARI).

鑑定特徵：黃紋麗龍蝨 (*Hydaticus vittatus* (Fabricius, 1775))在臺灣產的 *Hydaticus* 屬中近似於斑胸麗龍蝨 (*Hydaticus bipunctatus* Wehncke, 1876)，黃紋麗龍蝨可由前胸背板的黃斑更小、寬度短於翅鞘的黃條紋，生殖器中葉頂端細長，無明顯外擴來區別 (Wewalka, 2020)。

分布：臺灣、日本、中國、韓國?、東南亞、南亞 (Wewalka, 2020)。臺灣本島過去的紀錄相當多，離島地區則有澎湖群島、金門群島、蘭嶼的紀錄 (Sharp, 1882; Zimmermann, 1919; Kano, 1931; Miwa, 1931; Miwa et al., 1932; Wewalka, 1975, 2020; Nilsson et al., 1995; Fan et al., 2000; Liu, 2019)。

中華粒龍蝨
Laccophilus chinensis Boheman, 1858

Laccophilus chinensis Boheman, 1858:21 (orig. descr.).; Zimmermann, 1919: 75 (Kankau, Koshun); Miwa, 1931: 16 (Kankau, Kosempo, Kotosho, Nichigetsutan); Kamiya, 1938: 6 (Hori, Baikei, Taito, Kuraru, Kotosho, Hookotoo); Brancucci, 1983: 331 (Kankau, Koshun); Yano et al., 1983: 109 (Chiatou); Fan et al., 2000: 140 (Kinmen); Liu, 2019: 22 (Taichung, Miaoli, Pingtung).

標本檢查：TAIWAN: 1 male, 2 females, Penghu County, Xiyu Island, 24.VIII.2020, Jin-Huei Lin leg. (CNU, HCLC, NMNS).

分布：臺灣、日本、中國、東南亞、南亞 (Nakajima et al., 2020)。臺灣本島過去的紀錄相當多，離島地區則有澎湖群島、金門群島、蘭嶼的紀錄 (Zimmermann, 1919; Miwa, 1931; Kamiya, 1938; Brancucci, 1983; Yano et al., 1983; Fan et al., 2000, Liu, 2019)。

夏普氏粒龍蝨
Laccophilus sharpi Régimbart, 1889

Laccophilus sharpi Régimbart, 1889: 151 (orig. descr.); Zimmermann, 1919: 75 (Pilam, Lhihukoki); Miwa, 1931: 16 (Pilam, Lhihunkoki, Hori, Jitsugetsutan, Kotosho, Hokoto); Kamiya, 1938: 7 (Taihoku, Toroku, Hori, Musha, Taito, Heito, Taichu, Kisan, Choshu, Kuraru); Brancucci, 1983: 350 (Taiwan); Yano et al., 1983: 109 (Chiayi, Tainan, Kaohsiung, Pingtung); Fan et al., 2000: 140 (Kinmen); Liu, 2019: 22 (Taichung, Miaoli, Pingtung).
Laccophilus samosir Csiki, 1938: 125 (orig. descr.).
Laccophilus similis Régimbart, 1889: 150 (orig. descr.).

分布：臺灣、日本、韓國、中國、東南亞至中東 (Nakajima et al., 2020)。

備註：Miwa (1931) 記錄中華粒龍蝨 (*Laccophilus chinensis* Boheman, 1858) 分佈在澎湖地區，但未提供標本資訊和存放地，而本次研究亦未再發現此種。

擬姬龍蟲

***Rhantaticus congestus* Klug, 1833**

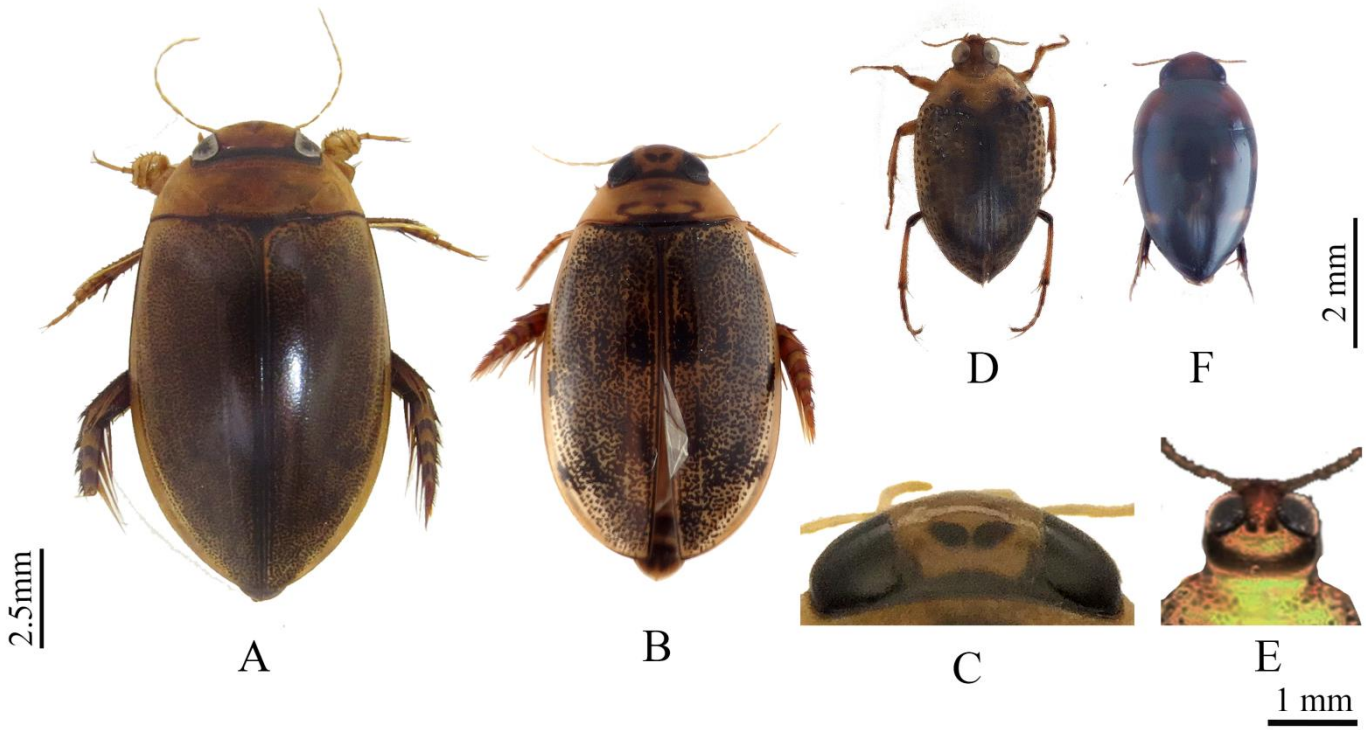
(圖三 B–C)

Hydaticus congestus Klug, 1833: 48 (orig. descr.).
Hydaticus rochasi Perroud & Montrouzier, 1864: 81 (orig. descr.).
Hydaticus signatipennis Laporte, 1835: 95 (orig. descr.).
Rhantaticus signatipennis Laporte, 1835: Régimbart, 1899: 340 (Formose).
Rhantaticus congestus (Klug, 1833): Miwa, 1931:18 (Anping); Kamiya, 1938: 54 (Taihoku, Hori); Nilsson et al., 1995: 368 (Taiwan); Liu, 2019: 21 (Miaoli, Nantou, Taichung).

標本檢查：TAIWAN: 2 females, Penghu County, Xiyu Island, 24.VIII.2020, Jin-Huei Lin leg. (HCLC, NMNS).

鑑定特徵：擬姬龍蟲 (*Rhantaticus congestus* Klug, 1833)為 *Rhantaticus* 屬唯一的物種，且分佈廣泛，體長 8.5–9.0 毫米 (圖三 B)，頭部黃色且具有兩條略向內斜的黑色條紋 (圖三 C)，翅鞘表面或多或少的不規則黑點，中間具有黑色橫帶斑紋，少數個體較不明顯。

分布：臺灣、日本 (南大東島)、中國、東南亞 (Nakajima et al., 2020)。此種在臺灣本島的北、中、南 (新北、臺北、苗栗、南投、臺中、臺南) 皆有分佈 (Kamiya, 1938; Liu, 2019)，離島則有金門的紀錄 (Fan et al., 2000)，本研究首次報導來自澎湖的紀錄。



圖三、A: 姬麗龍蟲 (*Hydaticus rhantoides* Sharp, 1882) 成蟲背面觀； B–C: 擬姬龍蟲 (*Rhantaticus congestus* Klug, 1833) ，B: 成蟲背面觀，C: 頭部背面觀；D–E: 中華巨基小頭水蟲 (*Peltodytes sinensis* Hope, 1845) ，D: 成蟲背面觀，E: 頭部；F: 光澤方胸龍蟲 (*Canthydrus nitidulus* Sharp, 1882) 成蟲背面觀。

豉甲科

Family Gyrinidae

南方圓跂甲

***Dineutus australis* Fabricius, 1775**

Gyrinus australis Fabricius, 1775: 235 (orig. descr.).
Dineutus australis Fabricius, 1775: Miwa, 1931: 20 (Kotosho, Hokoto); Mazzoldi, 1995: 161 (Lanyu).
Dineutus dentatus Suffrian, 1842: 256 (orig. descr.).
Gyrinus dentipennis Macleay, 1825: 30 (orig. descr.).
Gyrinus iridis Hope, 1842: 48 (orig. descr.).
Dineutes janthinus Blanchard, 1853: 50 (orig. descr.).
Dineutus leucopoda Montrouzier, 1860: 245 (orig. descr.).
Gyrinus limbatus Macleay, 1825: 30 (orig. descr.).
Gyrinus rufipes Fabricius, 1801: 276 (orig. descr.).

標本檢查：TAIWAN: 3 spec., 澎湖島, X-XI. 1943, 崛江表一 leg. (TARI); 2 males, 33 spec., Peng Hwu IsIs [=Penghu Islands, 澎湖群島], 4-13. vi. 1948, C. W. Che & I. T. Chen leg. (TARI).

分布：臺灣、日本 (琉球群島) 、中國至東南亞 (Nakajima et al., 2020)。

備註：澎湖唯一的跂甲科物種，成蟲棲息於水面。此物種的澎湖分布紀錄由 Miwa (1931) 所記載，但此篇論文僅提供”Hokoto”[= 澎湖]有所紀錄，但未提供更詳細的標本檢查。經過第一作者在農業試驗所 (TARI) 檢視時再次證實來自澎湖的標本，並提供標本資訊。

小頭水蟲科

Family Haliplidae

中華巨基小頭水蟲

***Peltodytes sinensis* (Hope, 1845)**

(圖三 D–E)

Haliplus sinensis Hope, 1845: 409 (orig. descr.).
Peltodytes sinensis (Hope, 1845): Miwa, 1932: 19 (Koshun, Taito); Vondel, 1995: 124 (Taipei, Kaohsiung).
Peltodytes koreanus Takizawa, 1931: 138 (orig. descr.).
Peltodytes aschnae Makhan, 1999: 269 (orig. descr.).

標本檢查：TAIWAN: 1 spec., Penghu County, Xiyu Island, 24. viii.2020, Jin-Huei Lin leg. (NMNS).

鑑定特徵：中華巨基小頭水蟲 (*Peltodytes sinensis* (Hope, 1845)) 體長 3.1–3.6 毫米 (圖三 D)，頭部具有一對黑色斑點 (圖三 E)，前胸背板黃色至黃褐色，後緣一對比頭部斑點更為大的黑色斑點，翅鞘密布大小不一的具有黑斑的點刻，近前胸背板的橫列點刻最大，後胸腹板突起頂部圓滑。

分布：臺灣、日本、中國、朝鮮半島、越南、菲律賓(Nakajima et al., 2020)。此種過去僅在臺灣本島有紀錄 (Miwa et al., 1932; Vondel, 1995)，本研究首次報導來自澎湖的紀錄，亦為小頭水蟲科在澎湖群島的首次紀錄。

牙蟲科

Family Hydrophilidae

費氏貝牙蟲

***Berosus fairmairei* Zaitzev, 1908**

(圖四 A–C)

Berosus acutispina Fairmaire, 1889: 336 (orig. descr.).

Berosus (*Enoplurus*) *fairmairei* Zaitzev, 1908: 355 (orig. descr.): Yano et al., 1983: 111 (Chiayi, Tainan, Kaohsiung); Schödl, 1992: 146 (Tainan, Pingtung).

標本檢查：TAIWAN: 1 male, Penghu County, Xiyu Island, 24.viii.2020, Jin-Huei Lin leg. (NMNS).

鑑定特徵：費氏貝牙蟲 (*Berosus fairmairei* Zaitzev, 1908) 體長 5.0–6.6 毫米 (圖四 A)，翅鞘背面具有黑色斑點的點刻與縱列的點刻，翅鞘末端分叉，雄性生殖器為三葉形狀 (圖四 B)，中葉向前彎曲，頂端略為擴大且截斷，陽基側突頂端向前彎曲且尖銳 (圖四 C)。

分布：臺灣、日本 (琉球群島)、中國、南亞、東南亞 (Nakajima et al., 2020)。此種過去在臺灣僅在臺灣本島有紀錄 (Yano et al., 1983; Schödl, 1992)，本研究首次報導來自澎湖的紀錄。

不丹陷口牙蟲

***Coelostoma bhutanicum* Jayaswal, 1972**

Coelostoma bhutanicum Jayaswal, 1972: 409 (orig. descr.): Liu et al., 2020: 158 (Changhua, Kaohsiung, Lanyu, Penghu, Taichung, Taipei).

標本檢查：TAIWAN: 1 male, 1 female, Makung [馬公], 19.vi.2000, C.-S. Lin & W.-T. Yang leg (NMNS).

分布：臺灣、日本、不丹、尼泊爾、印度 (Liu et al., 2020; Watanabe & Minoshima, 2020; Sheth et al., 2020)。

鑑定特徵：不丹陷口牙蟲 (*Coelostoma bhutanicum* Jayaswal, 1972) 非常近似於斯圖陷口牙蟲 (*Coelostoma stultum* (Walker, 1858))，兩者的區別在於不丹陷口牙蟲的生殖器中葉筆直且末端幾乎無膨大。

備註：此物種首次在臺灣的紀錄是由 Liu et al. (2020) 對臺灣產的陷口牙蟲屬的回顧，該研究包含澎湖的紀錄。

錨麗陽牙蟲

***Helochares atropiceus* Régimbart, 1903**

(圖四 D–E)

Helochares (s. str.) *atropiceus* Régimbart, 1903: 53 (orig. descr.).
Helochares (*Helochares*) *ohkurai* Satô, 1976: 21 (orig. descr.).

標本檢查：TAIWAN: 1 male, 1 female, Penghu County, Xiyu Island, 24.viii.2020, Jin-Huei Lin leg. (HCLC, NMNS).

鑑定特徵：錨麗陽牙蟲 (*Helochares atropiceus* Régimbart, 1903) 為 *Helochares* 屬的大型種，可由以下方式區分近似種: 體長 5.4–7.5 毫米，體色黑色具強烈光澤 (圖四 D)，前胸背板邊緣暗紅色，翅鞘無縱列的點刻，雄性生殖器膨大，前半部分支為三叉狀，兩側的前段向內彎曲 (圖四 E)。

分布：日本 (琉球群島)、中國、孟加拉、尼泊爾、馬來西亞、越南、泰國 (Jia & Tang, 2018; Nakajima et al., 2020) ，此種為澎湖的新紀錄種，亦同時為臺灣新紀錄種。

密突麗陽牙蟲

***Helochares neglectus* (Hope, 1845)**

(圖四 F–G)

Hydrobius neglectus Hope, 1845: 16 (orig. descr.).
Helochares neglectus (Hope, 1845): Jia, 2005: 149 (Taiwan).

標本檢查：TAIWAN: 6 spec., Makung, 19-21.vi.2000, UV Light, C. S. Lin & W. T. Yang leg. (NMNS).

鑑定特徵：紹德麗陽牙蟲 (*Helochares neglectus* (Hope, 1845)) 體長 4.0–5.0 毫米 (圖四 F)，體色黃褐色，上唇前端截斷，眼睛大小適中，小顎鬚筆直且長於觸角，觸角 9 節；前胸背板具有近似箭頭狀的黑斑 (圖四 G)，翅鞘表面具有縱列的點刻，無縫合紋；脛節表面具有密布的短柔毛，但靠近跗節處則平滑無毛；腹部末端具有小缺口。

分布：中國、尼泊爾、泰國 (Hansen, 1999)，臺灣過去僅有一筆紀錄 (Jia, 2005)，本研究首次報導來自澎湖的紀錄。

方胸龍蟲科
Family Noteridae

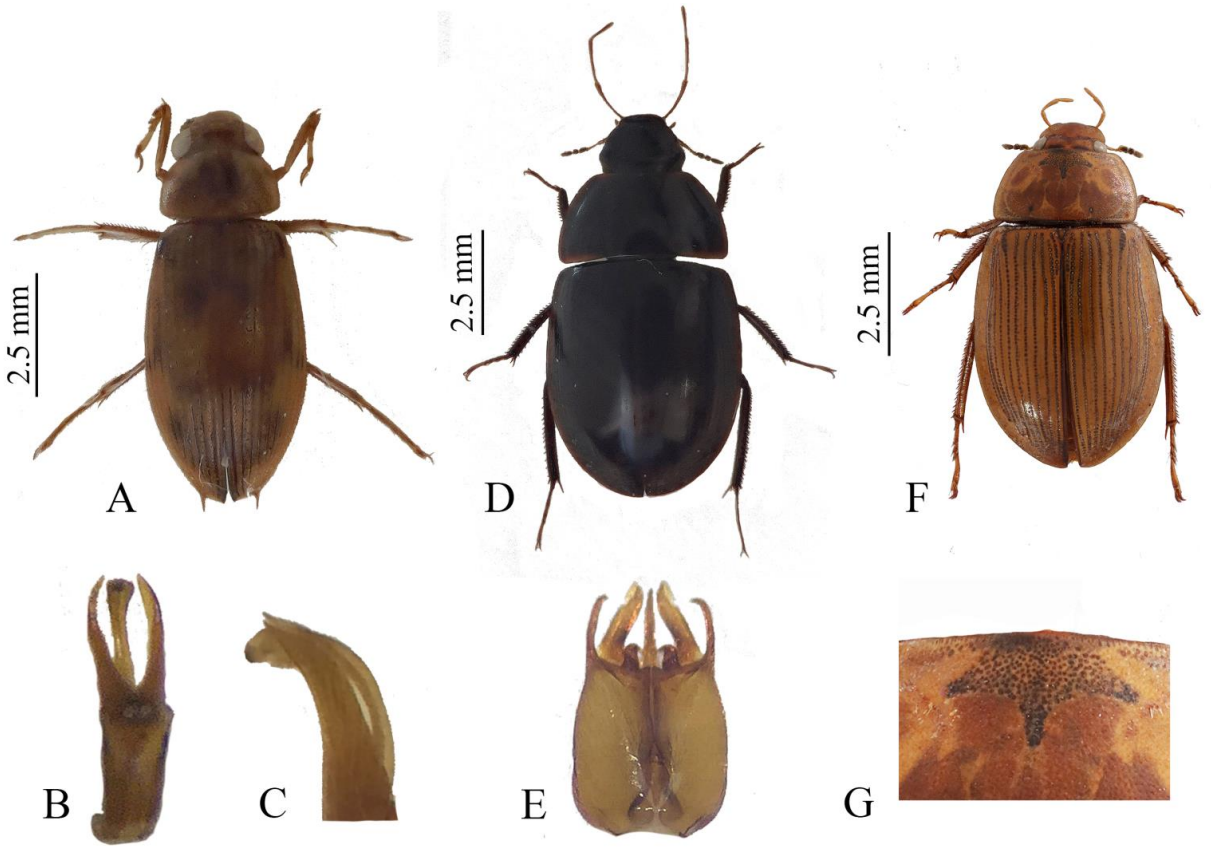
光澤方胸龍蟲
Canthydrus nitidulus Sharp, 1882
(圖三 F)

Canthydrus nitidulus Sharp, 1882: 278 (orig. descr., Formosa).
Canthydrus bifasciatus Régimbart, 1889:148 (orig. descr.).

標本檢查：TAIWAN: 4 spec., Penghu County, Xiyu Island, 24.viii.2020, Jin-Huei Lin leg. (HCLC, NMNS).

鑑定特徵：光澤方胸龍蟲 (*Canthydrus nitidulus* Sharp, 1882) 體長 3.2–3.5 毫米，前胸背板黃褐色至暗褐色，前緣與後緣具有黑色橫條，翅鞘黑色，前半部四個黃色塊狀斑點，後半部一對橫條黃色斑紋。

分布：臺灣、日本(琉球群島)、中國至柬埔寨 (Nakajima et al., 2020)。



圖四、A–C: 費氏貝牙蟲 (*Berosus fairmairei* Zaitzev, 1908)，A: 成蟲背面觀，B: 雄性生殖器背面觀，C: 雄性生殖器前半部側面觀；D–E: 錨麗陽牙蟲(*Helochares atropiceus* Régimbart, 1903)，D: 成蟲背面觀，E: 雄性生殖器；F–G: 密突麗陽牙蟲 (*Helochares neglectus* (Hope, 1845))，F: 成蟲背面觀，G: 前胸背板。

討論

本研究的所有材料來自於2020年的兩次實地考察和博物館藏品，實地考察的地點均來自澎湖縣西嶼，而其中一個地點 (23.597311, 119.514757)為主要的材料來源，其餘地點的物種相對較少，該水棲甲蟲種類數多的池塘有幾個特點: (一) 池塘最深水位較深、(二) 池塘邊坡周遭有豐富的植物與土壤、 (三) 池塘的周遭燈光和其他人為設施少，由以上特點可能有助於水棲甲蟲渡過旱季和不受人為干擾。本研究僅在西嶼的考察就記錄超過一半為澎湖新紀錄種，顯示出未來有必要對澎湖各個島嶼做全面的調查，並對生物多樣性高的池塘予以保護。

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Notes on Water Beetle (Insecta: Coleoptera) of Penghu Islands, Taiwan

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Abstract. The Penghu Islands are Taiwan's largest adjacent islands located in the Taiwan Strait. However, the aquatic beetles are still poorly known. In order to understand the aquatic insect fauna of Taiwan's offshore islands, a field survey was performed across Penghu islands and an investigation of museum collections was conducted. The results show that 15 species of aquatic beetles in five families are recorded from Penghu Islands, of which one is newly recorded in Taiwan: *Helochares atropiceus* Régimbart, 1903, and the following species are reported from Penghu for the first time: *Berosus fairmairei* Zaitzev, 1908, *Canthydrus nitidulus* Sharp, 1882, *Cybister sugillatus* Erichson, 1834, *C. tripunctatus lateralis* (Fabricius, 1798), *Helochares neglectus* (Hope, 1845), *H. atropiceus* Régimbart, 1903, *Hydaticus rhantoides* Sharp, 1882, *Peltodytes sinensis* (Hope, 1845) and *Rhantaticus congestus* Klug, 1833.

Key words: Adephaga, Hydrophilidae, aquatic insect, new record, adjacent islands

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